

To Cite:

Baharloo D, Bakhtiari M, Aslzaker M, Arani AM. Prediction of psychosocial adjustment based on Covid-19 stress, Covid-19 anxiety, acculturation, and perceived discrimination in Iranian students living abroad. Medical Science, 2021, 25(114), 1868-1877

Author Affiliation:

¹Ph.D. student of Clinical Psychology, Shahid Beheshti University of Medical Sciences, Tehran, Iran; Email: Dorsabahar@gmail.com

²Department of Clinical Psychology, Associate Professor, Shahid Beheshti University of Medical sciences, Tehran, Iran; Email: Maryam_bakhtiyari@sbmu.ac.ir

³Department of Clinical Psychology, Assistant Professor, Shahid Beheshti University of Medical sciences, Tehran, Iran

⁴Department of Clinical Psychology, Assistant Professor, Shahid Beheshti University of Medical sciences, Tehran, Iran

Corresponding author

Department of Clinical Psychology, Associate Professor, Shahid Beheshti University of Medical sciences, Tehran, Iran; Email: Maryam_bakhtiyari@sbmu.ac.ir

Peer-Review History

Received: 16 June 2021

Reviewed & Revised: 18/June/2021 to 21/July/2021

Accepted: 22 July 2021

Published: August 2021

Peer-review Method

External peer-review was done through double-blind method.

Prediction of psychosocial adjustment based on Covid-19 stress, Covid-19 anxiety, acculturation, and perceived discrimination in Iranian students living abroad

Dorsa Baharloo¹, Maryam Bakhtiari²✉, Maryam Aslzaker¹, Abbas Masjedi Arani¹

ABSTRACT

Introduction: The prevalence of pandemic has led to an increment of psychological problems, moreover decrement in psychosocial adjustment. These conditions may be more severe for immigrants. The present study aimed to predict psychosocial adjustment according to Covid-19 stress, Covid-19 anxiety, acculturation and perceived discrimination in Iranian students living abroad. **Method:** In this cross-sectional study, which was conducted in Jan 2021 during quarantine, 480 Iranian students living abroad were selected by purposive sampling. The participants completed a variety of questionnaires, such as the COVID-19 Anxiety Scale (CAS), Iranian acculturation, Adjustment Strain in International Student (ISAS), Acculturative Stress Scale for International Students, and COVID-19 Student Stress Questionnaire (CSSQ). The achieved data was analysed with the coefficient of correlation and simultaneous regression (entry method). **Results:** Psychosocial adjustment had a significant negative correlation with Covid-19 stress, Covid-19 anxiety, and perceived discrimination, while it has a significant positive correlation with acculturation. In addition, the predictor variables in the current study predict 48% of the variance of psychosocial adjustment. **Conclusion:** Organizations and centres of the populations in question should survey training and psychological interventions for psychological symptoms caused by Covid-19.

Keywords: Acculturation, psychosocial adjustment, COVID-19, anxiety, stress, perceived discrimination, students, abroad.

1. INTRODUCTION

The global outbreak of coronavirus 2019 (COVID-19) is considered as one of the rarest disasters in human history. The disease mentioned above has spread



DISCOVERY
SCIENTIFIC SOCIETY

© 2021 Discovery Scientific Society. This work is licensed under a Creative Commons Attribution 4.0 International License.

rapidly to all countries, infecting millions and killing more than four million individuals (World Health Organization, 2021). The pandemic has endangered the mental health of individuals and has exacerbated pre-existing psychological disorders (Wang et al., 2021), and it has created challenges in individual's psychosocial adjustment (Lin, 2021). The experts have expressed that the disease affects all individuals regardless of age, sex, race, ethnicity, class, or other social characteristics (World Health Organization, 2021). Of course, older people, low-income families, individuals with chronic underlying diseases or immune system diseases have been introduced as vulnerable to this epidemic (Mallapaty, 2021). One of the groups left out of this list is international students who may be economically, socially, and psychologically affected by this pandemic for their specific immigration status (Mia & Griffiths, 2020). A Canadian study found that 44% of immigrants were very concerned about their social relationships; moreover, 43% (of men) were concerned about meeting their financial obligations compared to the rate of Canadian-born individuals, in which the comparisons were 30% and 27%, respectively (Mia & Griffiths, 2020).

Migration and changing the place of residence are considered two of the most stressful changes in human life (Chen et al., 2020). Such changes may be from a village to the city or from one city to another, other times, change happens on a larger scale from one country to another (Chen et al., 2020). Individuals in great migrations face changes in the destination country, which require adaptation to living conditions, culture, moreover lifestyle changes; Thus, these changes require psychological and social adjustment (LeMaster et al., 2018). The psychological health of individuals is affected by their adaptation to post-migration conditions (Sangalang et al., 2019). Iran is considered as one of the countries where many individuals travel abroad annually, primarily to study (Ronaghy & Shajari, 2013). Studies indicate that psychological and social adjustments are impaired in all countries because of lifestyle changes with the outbreak of the Covid-19 virus after December 2019; such impairment is greater for immigrants due to their different living conditions (Wang et al., 2020). Some factors act as mediators' adaptation, moreover mediating factors affecting psychosocial adjustment due to the berry's model (Berry, 1997) of the psychosocial adjustment of immigrants. The amount of social support that the person loses and the amount of support they gain are among the factors influencing the attitude of the individuals of the host country towards the immigrants and the attitude of the immigrants towards themselves. Moreover, the factors which mediate between the influential and adjustment factors include personality factors and the acculturation model of individuals (Berry & Hou, 2017).

The psychosocial adjustment is influenced by psychological factors and the experiences after migration. Meanwhile, research indicates that the unstable conditions caused by the coronavirus outbreak in various countries have caused more anxiety in immigrants than in indigenous individuals, in a way that the Covid-19 anxiety makes residents and immigrants less able to adapt to the conditions (Chew et al., 2020). Berry's model for psychosocial adjustment declares that several factors act as underlying and mediating components in psychosocial adjustment (Berry & Hou, 2017). Berry expresses that intrinsic factor act as mediators of psychosocial adjustment while the components of environmental conditions act as underlying factors (Berry, 1997). The study of factors affecting psychosocial adjustment has great importance and necessity for consideration of the above-said issues and the importance of psychosocial adjustment during the pandemic outbreak. Hence, the present study is aimed to predict the psychosocial adjustment given to Covid-19 stress, Covid-19 Anxiety, acculturation and perceived discrimination in Iranian students living abroad.

2. METHOD

Participants and Procedures

The current study included 480 Iranian students living abroad who were selected by the purposive sampling method. The study conducted in Jan 2021, during quarantine. The electronic version of the questionnaires was prepared because of the limitations of collecting samples in one's presence. After that, the eligible individuals were invited to respond to the questionnaires of the COVID-19 Anxiety Scale (CAS), Acculturation Scale, Adjustment Strain in International Student (ISAS), Acculturative Stress Scale for International Students and COVID-19 Student Stress Questionnaire (CSSQ). They had informed consent at the beginning of the electronic questionnaire.

Questionnaires

COVID-19 Anxiety Scale (CAS)

The scale was developed in 2020 as a short form screening tool to identify cases of debilitating anxiety related to the Covid-19 crisis. 5 items of the current scale have been created regarding the symptoms of 775 adults with coronary anxiety disorder and have obtained sufficient reliability and validity (Cronbach's alpha 0.93). The existence of high scores on the scale above has been related to the diagnosis of Covid-19, disability, drug/alcohol coping style, severe frustration, suicidal ideation, and negative attitudes

toward Chinese products in addition to the president of the USA. This scale has distinguished well between individuals with and without debilitating anxiety compared to Covid-19 (90% sensitivity moreover 85% allocations) (Lee, 2020).

Adjustment Strain in International Student (ISAS)

The questionnaire is a modified version of Adjustment Strain in International Student (ISAS). The related questions to interactions with high school students have been removed from it, designed by Crano and Crano (1993). This version of the tool indicates the compatibility pressure score that varies between the range of 50 (no adjustment strain is experienced) to 300 (acute difficulty in adjustment). Moreover, the scale indicates five scores for academic, English, personal and social problems. The Cronbach's alpha of internal validity of the subscales was reported to be 0.81, 0.93, 0.69, 0.85, 0.81, while the internal validity of the total score was reported to be 0.95 (Crano & Crano, 1993).

Acculturative Stress Scale for International Students (ASSIS)

This factor is used in the acculturation stress scale of Sandhu and Asrabadi (1994) to measure the perceived discrimination variable. This scale consists of six items that measure unequal opportunities, bias, unequal treatment moreover unfriendliness. The answers for each of the items, ranging from 1 = strongly agree to 5 = strongly disagree. Cronbach's alpha of this scale is reported to be 0.90 (Sandhu & Asrabadi, 1994).

Acculturation Scale

The Acculturation Scale was developed in 2008 by Sabatier and Barry to measure the ethnic and national acculturation attitude. They preceded a series of exploratory and confirmatory factorial analysis in order to obtain the same factorial analysis for all groups (generations, countries and ethnic groups) with two orthogonal dimensions. This procedure resulted in two sets of questions (one set for ethnic, and one set for national acculturation attitudes) dealing with different domains that are relevant: language, marriage, social networks, values, emotions, parent-child relationship and cultural transmission. The results showed that the present questionnaire has acceptable validity and reliability (Sabatier & Barry, 2008).

COVID-19 Student Stress Questionnaire (CSSQ)

The current questionnaire was prepared by Zurlo et al., (2020) to assess the sources of stress related to COVID-19 among university students. The CSSQ includes three subscales: (1) The relationships and academic life (e.g., relationships with relatives, fellow associates, professors, moreover academic education), (2) isolation (e.g., social isolation and marital relationships, intimacy, and sex life); (3) Fear of Contagion. This questionnaire indicated the satisfactory internal consistency (Cronbach's alpha = 0.71; Omega McDonald = 0.71) (Zurlo et al., 2020).

Data analysis method

The data of the current study were analyzed by SPSS software version 21. The coefficient of correlation was used to survey the relationship between variables. In contrast, the simultaneous regression (entry method) was used to predict the psychosocial adjustment variable regarding Covid-19 stress, Covid-19 anxiety, acculturation and perceived discrimination.

Ethical consideration

The current study has been approved by the ethics committee of Shahid Beheshti University of Medical Sciences (IR.SBMU.MSP.REC.1399.574). Individuals with symptoms of anxiety and psychosocial adjustment were referred to a psychologist and psychiatrist.

3. RESULTS

In this study, 480 individuals participated, the mean and standard deviation of the participant's age was 29.40 ± 4.35 . In addition, the range of their age was between 18-49 years. Table 1 indicates the frequency and percentage of demographic information of the participants. As it can be seen the demographic data has been shown through charts below.

Table 1 frequency and percentage of demographic information of participants

	Variable	Frequency	Percentage
Gender	men	304	63.3
	Women	176	36.7
Educational Status	Bachelor	11	2.3
	Masters	212	44.2
	Ph.D./ Specialist	199	41.5
	Postdoctoral/subspecialty	58	12.1
Are you infected with ?Covid-19	Yes	445	92.7
	No	35	7.3
Have any of your loved ones died from Covid- ?19	Yes	408	85
	No	72	15
To what extent has Covid-19 made financial problems for you?	At all	31	6.5
	Little	63	13.2
	Medium	114	23.8
	Much	85	17.7
	Very much	187	39
To what extent has Covid-19 made social problems for you?	At all	176	36.7
	Little	146	30.4
	Medium	109	22.7
	Much	40	8.3
	Very much	9	1.9
To what extent has Covid-19 made problems in your intimate relationships?	At all	74	15.4
	Little	121	25.3
	Medium	154	32.1
	Much	97	20.2
	Very much	34	7.1
To what extent has a Covid-19 problem in your education?	At all	75	15.6
	Little	110	22.9
	Medium	165	34.4
	Much	83	17.3
	Very much	47	9.8

In Table 1, the frequency and percentage of demographic information were reported to participants. In Table 2, the descriptive indicators for participants' psychosocial adjustment, Covid-19 stress, Covid-19 anxiety, acculturation, and perceived discrimination are provided.

Table 2 descriptive indicators for psychosocial adjustment, Covid-19 stress, Covid-19 anxiety, and acculturation moreover perceived discrimination of participants

Variable	Mean	Standard deviation	Minimum	Maximum	skewness	Kurtosis
psychosocial adjustment	71.67	16.72	37	115	0/210	-0/648
Covid-19 stress	22.23	4.81	11	34	0/054	-0/788
Covid-19 anxiety	21.70	2.30	13	25	-0/821	0/792
acculturation	49.05	7.33	23	66	-0/607	0/534
Perceived discrimination	30.78	5.15	18	45	0.036	-0/160

The descriptive indicators for the research variables are provided as indicated in Table 2. The value of these indicators for the research variables is between +1 and -1 due to the skewness and kurtosis provided in Table 2, which means the normality of data distribution. Table 3 has purveyed the correlation coefficients of psychosocial adjustment with Covid-19 stress, Covid-19 anxiety, and acculturation moreover perceived discrimination of the participants.

Table 3 Psychosocial adjustment correlation coefficients with Covid-19 stress, Covid-19 anxiety, and acculturation moreover perceived discrimination of participants

Variable	1	2	3	5	6
1- Psychosocial adjustment	1				
2- Covid-19 stress	-0/36**	1			
3- Covid-19 anxiety	-0.23**	0.25**	1		
5- Acculturation	0/39**	0/02	0/12**	1	
6- Perceived discrimination	-0/53**	0.29**	0.03	-0/16**	1

** 0.01>P

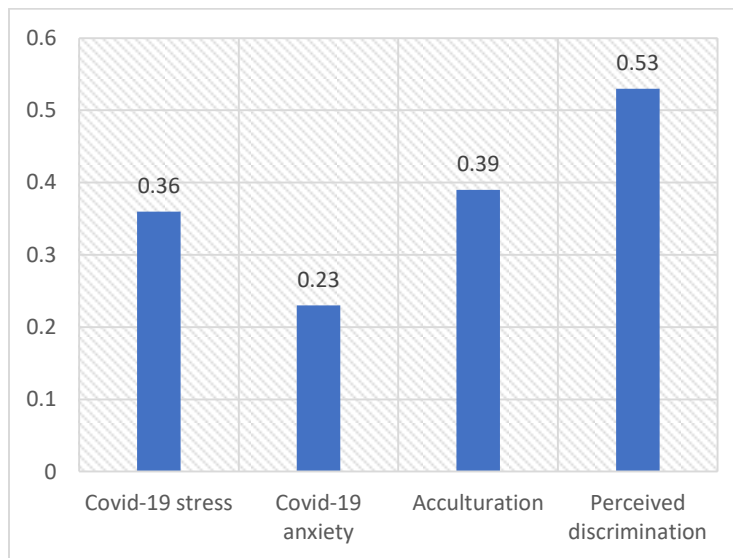


Figure 1 Psychosocial adjustment

Table 4 Results of simultaneous regression analysis (Enter) for predicting the psychosocial adjustment according to Covid-19 stress, Covid-19 anxiety, and acculturation moreover perceived discrimination

Predictive variable		Regression Coefficient							Abstract Model			
psychosocial adjustment		B	SE	β	t	P-value	T	VIF	R	R ²	ARS	D-W
	Constant	120.68	7.15	-	16.15	0.001<	-	-				
	Covid-19 stress	-0.69	0.12	-0.20	-5.56	0.001<	0.86	1.17				
	Covid-19 anxiety	-1.56	0.25	-0.22	-6.19	0.001<	0.92	1.09	0.69	0.48	0.47	1.76
	acculturation	0.82	0.08	0.36	10.63	0.001<	0.95	1.05				
	perceived discrimination	-1/30	0.11	-0.40	11.39	0.001<	0.89	1.13				

Note: B=Unstandardized Coefficients; SE= Std. Error; β = Standardized Coefficients (Beta); T= Tolerance; ARS=Adjusted R Square; D-W=Durbin-Watson

Based on Table 3 and figure 1, there is a significant negative relationship among psychosocial adjustment with Covid-19 stress, Covid-19 anxiety, and perceived discrimination ($P < 0.01$) according to the Pearson correlation coefficient. On the other hand, there is a positive and significant relationship between psychosocial adjustment and acculturation according to the Pearson correlation coefficient ($P < 0.01$). Table 4 indicates the results of simultaneous regression analysis (Enter) for predicting the psychosocial adjustment according to Covid-19 stress, Covid-19 anxiety, acculturation, moreover perceived discrimination.

The tolerance statistics for the predictor variables are higher than 0.40, as indicated in Table 4. Thus, the degree of alignment between the predictor variables is not a concern. The VIF (multiple alignments) statistic for predictor variables is close to an acceptable value of 1, indicating the lack of numerous alignments between the predictor variables of the research. Moreover, the statistic of Durbin – Watson test for the regression model is in the acceptable range of 1.50 to 2.50. Thus, the necessary assumptions for regression analysis are observed. As indicated in Table 4, regarding the results of simultaneous regression analysis (enter), the Covid-19 stress ($\beta = -0.20$), Covid-19 anxiety ($\beta = -0.22$), and perceived discrimination ($\beta = -0.40$) consider as negative and significant predictors of psychosocial adjustment ($P < 0.001$). Moreover, acculturation ($\beta = 0.36$) considers as a positive and significant predictor of psychosocial adjustment ($P < 0.001$). Thus, the existing predictor variables in the current study predict 48% of the variance of psychosocial adjustment.

4. DISCUSSION

The current study was conducted to determine and predict the psychosocial adjustment according to stress, anxiety, acculturation, and perceived discrimination in terms of Covid-19. The finding indicated that Covid-19-based stress was a negative and significant predictor of psychosocial adjustment, and there was a negatively significant correlation between them. These results are consistent with Ref. (Lin, 2021; Jiang, 2021; Valiente et al., 2021; Yildirim et al., 2020; Bantjes & Kagee, 2018; Chambers et al., 2017). For interpretation of these results, the prevalence of Covid-19 influenced most people's lives and resulted in significant stress among them (Voitsidis et al., 2020; Cheng et al., 2020). It is required to be considerably flexible to deal with the stress and challenges caused by epidemics. Psychological flexibility is a well-known mechanism that leads to a psychosocial adjustment in critical and stressful situations (Lam & McBride-Cheng, 2007). Additionally, psychological adjustment is a function of the implementation extent of problem-based coping strategies in manageable stressful situations and emotion-based coping strategies in uncontrollable situations (Cheng et al., 2004, Cheng et al., 2021). Then, the negative relationship between psychosocial adjustment and stress defined this sense that the less stress is experienced in critical conditions, the more adaption to the condition and more effective reactions are observed.

Moreover, the findings showed that Covid-19-based anxiety is a negative and significant predictor of psychosocial adjustment, and there is a negatively significant correlation between these results and the results of Ref. (Chambers, 2017; Lam & McBride-Cheng, 2007; Voitsidis et al., 2020; Cheng et al., 2020; Cheng et al., 2021; Arslan et al., 2021). The offering an explanation for these results shows that many individuals experience anxiety symptoms within the epidemic outbreak, even if they do not come down with the illness (Mazza et al., 2020). To add more, the pieces of evidence indicated that the threats and recession that occurred following Covid-19 have a significant effect on mental health (Holmes et al., 2020). Evidence has indicated that the anxiety symptoms peaked at the time of the SARS outbreak. After a while, it declined, and this decrease forced individuals to be more adaptable to the disease-caused conditions (Leung et al., 2005). Recent research supposed that for the individuals who find high levels of anxiety in Covid-19, more dysfunction, worries, inappropriate coping strategies, frustration, moreover suicide would be experienced (Lee, 2020; Yildirim et al., 2020). Besides, more psychological adjustment is associated with increased satisfaction and quality of life and reduced depression, anxiety, moreover stress (Chambers et al., 2017; Bantjes & Kagee, 2018; Yildirim et al., 2020). Additionally, with the high mortality rate of Covid-19, the individuals with Covid-19 anxiety may be at higher risk for non-psychosocial adjustment issues (Arslan et al., 2020).

Furthermore, findings indicated that acculturation is a positive and significant predictor of psychosocial adjustment, and there is a significant positive correlation between them. These results are consistent with the results of Ref. (Pang & Wang, 2020; Szabó et al., 2020; Warmoth et al., 2020; Chen et al., 2021; Yin et al., 2021). The acculturation process begins when individuals from various cultural places communicate to explain these results (Oerlemans & peeters, 2010). Improvement of acculturation moreover psychological adjustment is considered important social and political issues (Kouider et al., 2015). The cultural effect has been reflected in some of the national strategies adopted to fight the pandemics. For instance, in Sweden, because individuals pay a lot of attention to government recommendations, they are faced with less strictness for following health protocols (Pierre, 2020; Paterlini, 2020). Then, acculturation changes the behaviors, beliefs, and attitudes of individuals (Salant & Lauderdale, 2003; Thomson & Hoffman-Goetz, 2009). Consequently, acculturation significantly increases psychosocial adjustment within stressful accidents.

In addition, the results of the current study indicated that perceived discrimination is a negative and significant predictor of psychosocial adjustment, and there is a negative and significant relationship between them. These results are consistent with the results of the study (Duru & Poyrazli, 2011; Galliher et al., 2011; Ugidos et al., 2020; Haft & Zhou, 2021; Campo-Arias et al., 2021). Discrimination is an important issue in society and is considered as a risk factor for mental health to explain such results (Schmitt et al., 2014). So far, many studies have focused on recognizing individual factors in response to discrimination. Yet, little evidence has been found that significant global events impact individuals' experiences of discrimination. Hence, there exist numerous reports of increased discrimination against minorities following the outbreak of Covid-19 (Devakumar et al., 2020; Gover et al., 2020).

The idea that an individual is being treated unfairly because of race or ethnicity is likely to increase anxiety levels. This affects Covid-19 more significantly, as it may limit some individuals' access to health and safety factors. Furthermore, the impact increases in a perceived way due to news and reports published by the media (Haft & Zhou, 2021). Research has indicated that the relationship between perceived discrimination and psychological distress in adults has been meaningful (Syed & Juan, 2012). Moreover, the experience of discrimination in a study revealed that the relationship between perceived discrimination and depression symptoms was higher for educated youth in racially segregated schools than schools with racial diversity (Seaton & Douglass, 2014). Generally speaking, the results of these studies indicate that conditions and events may affect the relationship between perceived discrimination and psychosocial adjustments.

Limitations

The current study had some limitations similar to other studies. In this study, the use of self-report tools, the online distribution of questionnaires to fill out, the implementation during the Covid-19 pandemic, and not considering the participants' medical and psychiatric history are some of these limitations. Since the Covid-19 pandemic has caused a lot of psychological stress for individuals, many of these individuals may not agree to cooperate and complete the questionnaires. In addition, some participants likely answered the questions with impatience and low accuracy. For that reason and to decrease the limitations, it is suggested that longitudinal studies similar to this study consider other populations and use their results to explain the results of the main research further. It is further suggested that organizations and institutions related to the target populations pay more attention to provide effective training and psychological interventions for decreasing the psychological symptoms of Covid-19 and quarantine.

5. CONCLUSION

The current study is trying to determine and forecast psychosocial adjustment given to Covid-19 stress, Covid-19 anxiety, and acculturation, moreover perceived discrimination during quarantine. The result of the study was evaluated using the Pearson correlation test and simultaneous regression analysis (Enter). The results indicated a negative and significant relationship between psychosocial adjustment with Covid-19 stress, Covid-19 anxiety, and perceived discrimination ($P < 0.01$). In contrast, the relationship between psychosocial adjustment and acculturation is positive and significant ($P < 0.01$). Furthermore, the regression analysis results indicated that Covid-19 stress, Covid-19 anxiety, and perceived discrimination are negative and significant predictors of psychosocial adjustment ($P < 0.001$). At the same time, acculturation considers as a positive and significant predictor of psychosocial adjustment ($P < 0.001$). Based on the results, organizations and institutions related to the target populations should provide training and psychological and social interventions to improve residents' adjustment conditions.

Acknowledgement

We thank the participants who were all contributed samples to the study.

Author contributions

All authors contributed to the design of the research. Baharloo, Bakhtiari, and Aslzaker collected and analyzed the data. Baharloo, Bakhtiari, and Masjedi Arani drafted the manuscript. All authors contributed to editing the manuscript. The final version of manuscript has been read and approved by all authors.

Funding

This study has not received any external funding.

Conflict of interest

The authors declare that there are no conflicts of interests.

Ethical approval

The study was approved by the Medical ethics Committee of Shahid Beheshti University of Medical Sciences (IR.SBMU.MSP.REC.1399.574).

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

1. Arslan G, Yıldırım M, Tanhan A, Buluş M, Allen K-A. Coronavirus stress, optimism-pessimism, psychological inflexibility, and psychological health: Psychometric properties of the Coronavirus Stress Measure. *Int J Ment Health Addict* 2020;1-17.
2. Arslan G, Yıldırım M, Zangeneh M. Coronavirus anxiety and psychological adjustment in college students: Exploring the role of college belongingness and social media addiction. *Int J Ment Health Addict* 2021;1-14.
3. Bantjes J, Kagee A. Common mental disorders and psychological adjustment among individuals seeking HIV testing: a study protocol to explore implications for mental health care systems. *Int J ment health syst* 2018; 12(1):16.
4. Berry JW, Hou F. Acculturation, discrimination and wellbeing among second generation of immigrants in Canada. *Int J Intercult Relat* 2017; 61:29-39.
5. Berry JW. Immigration, acculturation, and adaptation. *Appl Psychol* 1997; 46(1):5-34.
6. Campo-Arias A, Jiménez-Villamizar MP, Caballero-Domínguez CC. Healthcare Worker's Distress and Perceived Discrimination Related to COVID-19 in Colombia. *Nurs Health Sci* 2021.
7. Chambers DC, Yusen RD, Cherikh WS, Goldfarb SB, Kucheryavaya AY, Khusch K, Levvey BJ, Lund LH, Meiser B, Rossano JW, Stehlik J. The registry of the International Society for Heart and Lung Transplantation: thirty-fourth adult lung and heart-lung transplantation report—2017; focus theme: allograft ischemic time. *J Heart Lung Transplant*. 2017; 36(10):1047-1059.
8. Chen M, Sun X, Chen Q, Chan KL. Parental migration, children's safety and psychological adjustment in rural China: a meta-analysis. *Trauma, Violence, & Abuse* 2020; 21(1):113-22.
9. Chen X, Fu R, Li D, Liu J, Liu S, Cui L. Acculturation and adjustment among rural migrant children in urban China: A longitudinal study. *Appl Psychol Health Well-Being* 2021.
10. Cheng C, Ebrahimi OV, Lau Yc. Maladaptive coping with the infodemic and sleep disturbance in the COVID-19 pandemic. *J Sleep Res* 2021 30(4):e13235.
11. Cheng C, Hui W-m, Lam S-k. Psychosocial factors and perceived severity of functional dyspeptic symptoms: a psychosocial interactionist model. *Psychosomatic Med* 2004; 66(1):85-91.
12. Cheng C, Wang H-y, Ebrahimi OV. Adjustment to a "New Normal:" Coping Flexibility and Mental Health Issues During the COVID-19 Pandemic. *Front Psychiatry* 2021; 12(2021):353.
13. Chew QH, Wei KC, Vasoo S, Chua HC, Sim K. Narrative synthesis of psychological and coping responses towards emerging infectious disease outbreaks in the general population: practical considerations for the COVID-19 pandemic. *Singapore Med J* 2020; 61(7):350.
14. Crano SL, Crano WD. A measure of adjustment strain in international students. *J Cross-Cult Psychol* 1993; 24(3):267-83.
15. Devakumar D, Shannon G, Bhopal SS, Abubakar I. Racism and discrimination in COVID-19 responses. *The Lancet* 2020; 395(10231):1194.
16. Duru E, Poyrazli S. Perceived discrimination, social connectedness, and other predictors of adjustment difficulties among Turkish international students. *Int J Psychol* 2011; 46(6):446-54.
17. Galliher RV, Jones MD, Dahl A. Concurrent and longitudinal effects of ethnic identity and experiences of discrimination on psychosocial adjustment of Navajo adolescents. *Dev psychol* 2011; 47(2):509.
18. Gover AR, Harper SB, Langton L. Anti-Asian hate crime during the COVID-19 pandemic: Exploring the reproduction of inequality. *Am J crim justice* 2020; 45(4):647-67.
19. Haft SL, Zhou Q. An outbreak of xenophobia: Perceived discrimination and anxiety in Chinese American college students before and during the COVID-19 pandemic. *Int J Psycho* 2021.
20. Holmes EA, O'Connor RC, Perry VH, Tracey I, Wessely S, Arseneault L, Ballard C, Christensen H, Cohen Silver R, Everall I, Ford T, John A, Kabir T, King K, Madan I, Michie S, Przybylski AK, Shafran R, Sweeney A, Worthman CM, Yardley L, Cowan K, Cope C, Hotopf M. Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. *The Lancet Psychiatry* 2020; 7(6):547-560.
21. Hommey C, Ma J, Asamani L, Hanson P. The Moderating Effect of Acculturation Strategies on the Relationship Between Newcomer Adjustment and Employee Behavior. *Front Psychol* 2020;11:2117.
22. Jiang Q. Stress response of police officers during COVID-19: A moderated mediation model. *J. Investig Psycholog Offender Profiling* 2021;18(2):116-28.

23. Kouider EB, Koglin U, Petermann F. Emotional and behavioral problems in migrant children and adolescents in American countries: a systematic review. *J Immigr Minor Health* 2015; 17(4):1240-58.
24. Lam CB, McBride-Chang CA. Resilience in young adulthood: The moderating influences of gender-related personality traits and coping flexibility. *Sex roles* 2007; 56(3):159-72.
25. Lee SA. Coronavirus Anxiety Scale: A brief mental health screener for COVID-19 related anxiety. *Death Studies* 2020; 44(7):393-401.
26. LeMaster JW, Broadbridge CL, Lumley MA, Arnetz JE, Arfken C, Feters MD, Jamil H, Pole, N, Arnetz, B. Acculturation and post-migration psychological symptoms among Iraqi refugees: A path analysis. *Am J Orthopsychiatry* 2018; 88(1):38.
27. Leung GM, Ho L-M, Chan SKK, Ho S-Y, Bacon-Shone J, Choy RYL, Hedley AJ, Lam TH, Fielding R. Longitudinal assessment of community psychobehavioral responses during and after the 2003 outbreak of severe acute respiratory syndrome in Hong Kong. *Arch Clin Infect Dis* 2005; 40(12):1713-20.
28. Lin L. Longitudinal associations of meaning in life and psychosocial adjustment to the COVID-19 outbreak in China. *Br J health psychol* 2021;26(2):525-34.
29. Mallapaty S. The coronavirus is most deadly if you are old and male. *Nature* 2020; 585(7823):16-17.
30. Mazza C, Ricci E, Biondi S, Colasanti M, Ferracuti S, Napoli C, Roma, P. A nationwide survey of psychological distress among Italian people during the COVID-19 pandemic: immediate psychological responses and associated factors. *Int J environ res and public health* 2020;17(9):3165.
31. Mia MA, Griffiths MD. Letter to the Editor: The economic and mental health costs of COVID-19 to immigrants. *J Psychiatr Res* 2020;128:23-24.
32. Oerlemans WGM, Peeters MCW. The multicultural workplace: interactive acculturation and intergroup relations. *J manag psychol* 2010; 25:460-78.
33. Pang H, Wang J. Promoting or prohibiting: Understanding the influence of social media on international students' acculturation process, coping strategies, and psychological consequences. *Telemat Inform* 2020:101454.
34. Paterlini M. Closing borders is ridiculous": the epidemiologist behind Sweden's controversial coronavirus strategy. *Nature* 2020; 580(7805):574.
35. Pierre J. Nudges against pandemics: Sweden's COVID-19 containment strategy in perspective. *Policy and Soc* 2020;39(3):478-93.
36. Ronaghy HA, Shajari A. The Islamic Revolution of Iran and migration of physicians to the United States. *Arch Iran Med* 2013;16(10), 0-0.
37. Sabatier C, Berry JW. The development and use of scales to assess the acculturation strategies of immigrant parents and second-generation adolescents. In conference of the International Association for Cross-Cultural Psychology, Bremen, Germany 2008.
38. Salant T, Lauderdale DS. Measuring culture: a critical review of acculturation and health in Asian immigrant populations. *Soc sci med* 2003; 57(1):71-90.
39. Sandhu DS, Asrabadi BR. Development of an acculturative stress scale for international students: Preliminary findings. *Psychol Rep* 1994; 75(1):435-48
40. Schmitt MT, Branscombe NR, Postmes T, Garcia A. The consequences of perceived discrimination for psychological well-being: a meta-analytic review. *Psychol bull* 2014; 140(4):921.
41. Seaton EK, Douglass S. School diversity and racial discrimination among African-American adolescents. *Cult Divers and Ethn Minor Psychol* 2014; 20(2):156-65.
42. Syed M, Juan MJD. Discrimination and psychological distress: Examining the moderating role of social context in a nationally representative sample of Asian American adults. *Asian Am J Psychol* 2014; 3(2):104-20.
43. Szabó Á, Papp ZZ, Luu LAN. Social contact configurations of international students at school and outside of school: Implications for acculturation orientations and psychological adjustment. *Int J Intercult relat* 2020; 77(2020):69-82.
44. Thomson MD, Hoffman-Goetz L. Defining and measuring acculturation: a systematic review of public health studies with Hispanic populations in the United States. *Soc sci Med* 2009; 69(7):983-91
45. Ugidos C, López-Gómez A, Castellanos MÁ, Saiz J, González-Sanguino C, Ausín B, Munoz, M. Evolution of intersectional perceived discrimination and internalized stigma during COVID-19 lockdown among the general population in Spain. *Int J Soc Psychiatry* 2020:1-9
46. Valiente C, Contreras A, Peinado V, Trucharte A, Martínez AP, Vázquez C. Psychological adjustment in Spain during the COVID-19 pandemic: positive and negative mental health outcomes in the general population. *Span J Psychol* 2021; 24:8.
47. Voitsidis P, Gliatas I, Bairachtari V, Papadopoulou K, Papageorgiou G, Parlapani E, Syngelakis M, Holeva V, Diakogiannis I. Insomnia during the COVID-19 pandemic in a Greek population. *Psychiatry res* 2020; 280:113076.
48. Wang M, Zhao Q, Hu C, Wang Y, Cao J, Huang S Liang Q, Guo Z, Wang L, Ma L, Zhang S, Wang H, Zhu C, Luo W, Guo C, Chen C, Chen Y, Xu K, Yang H, Ye L, Wang Q, Zhan P, Li G, Yang MJ, Fang Y, Zhu S, Yang Y. Prevalence of psychological disorders in the COVID-19 epidemic in China: A real world cross-sectional study. *J Affect Disord* 2021; 281:312-20.
49. Wang X, Hujaree K, Wang F. Mental health impacts for international students during the COVID-19 pandemic in China. *Research Square* 2021.
50. Warmoth K, Wong CCY, Chen L, Ivy S, Lu Q. The role of acculturation in the relationship between self-stigma and

- psychological distress among Chinese American breast cancer survivors. *Psychol health Med* 2020; 25(10):1278-92.
51. World Health Organization. Who Coronavirus disease (COVID-19) Dashboard. Retrieved from <https://www.who.int/emergencies/diseases/novel-coronavirus-2019> Jul2021.
 52. Yıldırım M, Arslan G, Özaslan A. Perceived risk and mental health problems among healthcare professionals during COVID-19 pandemic: exploring the mediating effects of resilience and coronavirus fear. *Int J ment health addic* 2020:1-11.
 53. Yin M, Aoki K, Liao KY-H, Xu H. An Exploration on the Attachment, Acculturation, and Psychosocial Adjustment of Chinese International Students in Japan. *J Int Stud* 2021; 11(1):176-194.
 54. Zurlo MC, Cattaneo Della Volta MF, Vallone F. COVID-19 student stress questionnaire: development and validation of a questionnaire to evaluate students' stressors related to the coronavirus pandemic lockdown. *Front Psychol* 2020; 11:2892.